WHAT IS CLAIMED IS:

1. A polyurethane elastomer having a node density of from 0.1 mole/kg to 0.0001 mole/kg comprising the reaction product of

a) at least one polyetherester polyol having a number average molecular weight of from 1000 g/mol to 6000 g/mol, a number average functionality of from 1.9 to 2.5 and a ratio of ether groups to ester groups of from 0.3 to 2.5,

which comprises a polycondensation product of

a1) at least one dicarboxylic acid having up to 12 carbon atoms and/or a derivative thereof,

a2) at least one polyether polyol having a number average molecular weight of from 1000 g/mol to 6000 g/mol, an average functionality of from 1.7 to 2.5 and from 70% to 100% primary OH groups, and

a3) at least one polyol having a number average molecular weight of from 18 to 750 g/mol, a number average functionality of from 2 to 8 and at least 2 terminal OH groups per molecule,

b) optionally, a polymer polyol having an OH number of from 10 to 149 and average functionality of from 1.7 to 4 and which comprises from 1 to
50 wt.% filler, in relation to the polymer polyol,

c) a low molecular weight chain extender having an average functionality of from 1.8 to 2.1 and a number average molecular

weight of from 18 to 750 g/mol and/or a cross-linking agent having an average functionality of from 2.2 to 8 and a number average molecular weight of from 18 to 750 g/mol,

in the presence of

d) optionally, a catalyst,
e) optionally, a blowing agent and
f) optionally, an additive,

with

g) a polyisocyanate comprising

g1) an organic polyisocyanate,
g2) a modified polyisocyanate,
g3) an isocyanate-terminated prepolymer based on g1) and/or g2) and a polyol x),

wherein the polyol x) comprises

x1) a polyester polyol,
x2) a polyetherester polyol or
x3) a mixture of x1) and x2),

g4) or a mixture of g1), g2) and/or g3).

2. The polyurethane elastomer of Claim 1 in which the polyisocyanate g1) is 4,4'-diphenylmethane diisocyanate, 2,4'-diphenylmethane diisocyanate or a mixture thereof.

3. The polyurethane elastomer of Claim 1 in which the polyol a3) is 1,4-butanediol, 1,2-ethanediol, diethylene glycol, hexanediol, trimethylol-propane, sorbitan, pentaerythritol, triethanolamine or glycerol.

4. A process for the production of the polyurethane elastomer of Claim 1 comprising reacting

a) at least one polyetherester polyol having a number average molecular weight of from 1000 g/mol to 6000 g/mol, a number average functionality of from 1.9 to 2.5 and a ratio of ether groups to ester groups of from 0.3 to 2.5,

which comprises a polycondensation product of

a1) at least one dicarboxylic acid having up to 12 carbon atoms and/or a derivative thereof,

a2) at least one polyether polyol having a number average molecular weight of from 1000 g/mol to 6000 g/mol, an average functionality of from 1.7 to 2.5 and 70% to 100% primary OH groups, and

a3) at least one polyol having a number average molecular weight of from 18 to 750 g/mol, a number average functionality of from 2 to 8 and at least 2 terminal OH groups per molecule,

b) optionally, a polymer polyol which has an OH number of from 10 to 149 and average functionality of from 1.7 to 4 and which comprises from 1 to 50 wt.% filler, in relation to the polymer polyol,

c) a low molecular weight chain extender having an average functionality of from 1.8 to 2.1 and a number average molecular weight of from 18 g/mol to 750 g/mol and/or a cross-linking agent having an average functionality of from 2.2 to 8 and a number average molecular weight of from 18 g/mol to 750 g/mol,

in the presence of

d) optionally, a catalyst,
e) optionally, a blowing agent and
f) optionally, an additive,

with

g) at least one polyisocyanate comprising

g1) an organic polyisocyanate,
g2) a modified polyisocyanate,
g3) an isocyanate-terminated prepolymer based on g1) and/or g2) and a polyol x),

wherein the polyol x) comprises

x1) a polyester polyol,
x2) a polyetherester polyol or
x3) a mixture of x1) and x2),

g4) and a mixture of g1), g2) and/or g3).

5. An elastomeric molding having a density of from 180 to 1200 kg/m^3 produced from the polyurethane elastomer of Claim 1.

6. A shoe sole having a density of from 180 to 1200 kg/m^3 produced from the polyurethane elastomer of Claim 1.

7. A process for the production of an elastomeric molded article comprising molding the polyurethane elastomer of Claim 1.

8. A process for the production of a shoe sole comprising molding the polyurethane elastomer of Claim 1 into the form of a shoe sole.